

CLAIMS

We claim:

- 1) A process for transitioning from a first polymerization catalyst system to a second polymerization catalyst system incompatible with the first polymerization catalyst system in a gas-phase reactor, comprising:
 - a) conducting a first polymerization reaction in the gas-phase reactor using a first polymerization catalyst system,
 - b) stopping the first polymerization reaction,
 - c) removing the contents of said first polymerization reaction from the gas-phase reactor while maintaining a substantially closed system,
 - d) in the substantially closed system, introducing a substantially contaminant free seedbed into the gas-phase reactor after said removing step,
 - e) introducing a second feed system into the gas-phase reactor,
 - f) introducing a second catalyst system into the gas-phase reactor, and
 - g) conducting a second polymerization reaction.
- 2) The process of claim 1, wherein said first polymerization catalyst system comprises a Ziegler-Natta catalyst system, and said second polymerization catalyst system comprises a metallocene catalyst system.
- 3) The process of claim 1, wherein said step of removing the contents of said first polymerization system comprises removing greater than 95% by volume of said contents through a discharge outlet.
- 4) The process of claim 1, wherein the step of stopping the first polymerization reaction comprises adding a catalyst killer to the first polymerization reaction.
- 5) The process of claim 1, wherein said substantially contaminant free seedbed comprises less than 10 parts per million of contaminants.
- 6) The process of claim 1, wherein said substantially contaminant free seedbed is prepared by purging said seedbed with an inert gas and steam.
- 7) The process of claim 1, wherein the reactor is maintained in a substantially closed system by not opening said reactor to the atmosphere.

- 8) The process of claim 1, wherein the reactor is maintained in a substantially closed system by providing sufficient pressure in the reactor to prevent entry of contaminants from the atmosphere.
- 9) A process for transitioning from a first polymerization catalyst system to a second polymerization catalyst system incompatible with the first polymerization catalyst system in a gas-phase reactor, comprising:
 - a) conducting a first polymerization reaction in the gas-phase reactor using a first polymerization catalyst system and forming a polymerization product,
 - b) forming a substantially contaminant free seedbed by removing a portion of the product from the first polymerization reaction, purging said removed product with an inert gas in a first container and storing said removed product in a second container under a blanket of inert gas,
 - c) stopping the first polymerization reaction,
 - d) removing the contents of said first polymerization reaction from the gas-phase reactor while maintaining a substantially closed system,
 - e) in the substantially closed system, introducing said substantially contaminant free seedbed into the gas-phase reactor after said step of removing the contents of said first polymerization reaction,
 - f) introducing a second feed system into the gas-phase reactor,
 - g) introducing a second catalyst system into the gas-phase reactor, and
 - h) conducting a second polymerization reaction.
- 10) The process of claim 9, wherein said first polymerization catalyst system comprises a Ziegler-Natta catalyst system, and said second polymerization catalyst system comprises a metallocene catalyst system.
- 11) The process of claim 9, wherein said step of removing the contents of said first polymerization system comprises removing greater than 95% of said contents through a discharge outlet nozzle.
- 12) The process of claim 9, wherein the step of stopping the first polymerization reaction comprises adding a catalyst killer to the first polymerization reaction.

- 13) The process of claim 9, wherein said substantially contaminant free seedbed comprises less than 10 parts per million of contaminants.
- 14) The process of claim 9, wherein the reactor is maintained in a substantially closed system by not opening said reactor to the atmosphere.
- 15) The process of claim 9, wherein the reactor is maintained in a substantially closed system by providing sufficient pressure in the reactor to prevent entry of contaminants from the atmosphere.
- 16) A process for transitioning from a first polymerization catalyst system to a second polymerization catalyst system incompatible with the first polymerization catalyst system in a gas-phase reactor, comprising:
 - a) conducting a first polymerization reaction in the gas-phase reactor using a first polymerization catalyst system and forming a polymerization product,
 - b) forming a substantially contaminant free seedbed by removing a portion of the product from the first polymerization reaction, purging said removed product with an inert gas in a container and storing said removed product in said container under a blanket of inert gas,
 - c) stopping the first polymerization reaction,
 - d) removing the contents of said first polymerization reaction from the gas-phase reactor while maintaining a substantially closed system,
 - e) in the substantially closed system, introducing said substantially contaminant free seedbed into the gas-phase reactor after said step of removing the contents of said first polymerization reaction,,
 - f) introducing a second feed system into the gas-phase reactor,
 - g) introducing a second catalyst system into the gas-phase reactor, and
 - h) conducting a second polymerization reaction.
- 17) The process of claim 16, wherein said first polymerization catalyst system comprises a Ziegler-Natta catalyst system, and said second polymerization catalyst system comprises a metallocene catalyst system.
- 18) The process of claim 16, wherein said step of removing the contents of said first polymerization system comprises removing greater than 95% of said contents through a discharge outlet nozzle.

- 19) The process of claim 16, wherein the step of stopping the first polymerization reaction comprises adding a catalyst killer to the first polymerization reaction.
- 20) The process of claim 16, wherein said substantially contaminant free seedbed comprises less than 10 parts per million of contaminants.
- 21) The process of claim 16, wherein the reactor is maintained in a substantially closed system by not opening said reactor to the atmosphere.
- 22) The process of claim 16, wherein the reactor is maintained in a substantially closed system by providing sufficient pressure in the reactor to prevent entry of contaminants from the atmosphere.
- 23) A process for transitioning from a first polymerization catalyst system to a second polymerization catalyst system incompatible with the first polymerization catalyst system in a gas-phase reactor, comprising:
 - a) conducting a first polymerization reaction in the gas-phase reactor using a first polymerization catalyst system,
 - b) stopping the first polymerization reaction,
 - c) removing the contents of said first polymerization reaction from the gas-phase reactor while maintaining a substantially closed system,
 - d) obtaining a substantially contaminant free seedbed from a second polymerization reactor,
 - e) in the substantially closed system, introducing said substantially contaminant free seedbed into the gas-phase reactor after said step of removing the contents of said first polymerization reaction,,
 - f) introducing a second feed system into the gas-phase reactor,
 - g) introducing a second catalyst system into the gas-phase reactor, and
 - h) conducting a second polymerization reaction.
- 24) The process of claim 23, wherein said first polymerization catalyst system comprises a Ziegler-Natta catalyst system, and said second polymerization catalyst system comprises a metallocene catalyst system.
- 25) The process of claim 23, wherein said step of removing the contents of said first polymerization system comprises removing greater than 95% of said contents through a discharge outlet nozzle.

- 26) The process of claim 23, wherein the step of stopping the first polymerization reaction comprises adding a catalyst killer to the first polymerization reaction.
- 27) The process of claim 23, wherein said substantially contaminant free seedbed comprises less than 10 parts per million of contaminants.
- 28) The process of claim 23, wherein the gas phase-reactor is maintained in a substantially closed system by not opening said gas-phase reactor to the atmosphere.
- 29) The process of claim 23, wherein the gas-phase reactor is maintained in a substantially closed system by providing sufficient pressure in the gas-phase reactor to prevent entry of contaminants from the atmosphere.
- 30) The process according to claim 1, wherein the step of introducing a substantially contaminant free seedbed into the gas-phase reactor is accomplished by means of a rotary feeder.
- 31) The process according to Claim 9, wherein the step of introducing a substantially contaminant free seedbed into the gas-phase reactor is accomplished by means of a rotary feeder.
- 32) The process according to Claim 16, wherein the step of introducing a substantially contaminant free seedbed into the gas-phase reactor is accomplished by means of a rotary feeder.
- 33) The process according to Claim 23, wherein the step of introducing a substantially contaminant free seedbed into the gas-phase reactor is accomplished by means of a rotary feeder.